REMARKS

Applicant respectfully requests re-consideration of the application in view of the arguments presented below.

Summary of Office Action

Claims 1-16 are pending.

Claims 1, 2, 13 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,619,567 of Apfel ("Apfel") in view of U.S. Patent No. 6,665,398 of Ludeman ("Ludeman").

Claims 3-5, 14, 16 were rejected under 35 U.S.C. § 103 as being unpatentable over Apfel in view of Ludeman.

Claims 6-9 were rejected under 35 U.S.C. § 103 as being unpatentable over Apfel in view of Ludeman and U.S. Patent No. 5,878,133 of Zhou ("Zhou").

Claims 10-12, 15 were rejected under 35 U.S.C. § 103 as being unpatentable over Apfel in view of Ludeman and Zhou.

Summary of Amendments

The specification was amended at page 3 for consistency of terminology. Support for the amendment can also be found at page 3, for example.

Claims 1, 6, and 13 were amended. Applicant submits that support for the amendments is found in the specification including the figures and the claims as originally filed. Support for the amendments may be found, for example, at Figures 3-4 and in the specification at pages 8-10.

Comment on Office Action

The Examiner cited portions of 35 U.S.C. § 102 but did not otherwise identify any claims to which such a rejection might apply. Applicant is therefore disregarding this citation in the Office Action.

Response to 35 U.S.C. § 103 rejections

Claims 1-16 were rejected as being unpatentable over various combinations of Apfel, Ludeman, and Zhou. The Examiner is referred to applicant's Figure 3 for which reference numbers are utilized for the purpose of example only in the arguments presented blow.

Applicant respectfully submits that the cited references, alone or in combination, do not teach or disclose *a method of controlling a SLIC DC feed with hysteresis* including a) transitioning DC feed from a first point (e.g., 332) on a first characteristic curve to a first point (e.g., 344) on a second characteristic curve, and b) transitioning DC feed from a second point (e.g., 342) on the second characteristic curve to a second point (e.g., 334) on the first characteristic curve, *wherein the points (332, 334, 342, 344) are all distinct AND the first point (332) of the first characteristic curve and the second point (342) of the second characteristic curve have distinct loop currents.*

Apfel discloses the use of hysteresis for DC feed control, however, Apfel relies on a single loop current threshold to determine when to switch between modes. The Examiner is referred to Apfel's Figures 3 and 5. Note that switch 315 (531) is used to couple/decouple current source I3 from contributing to the I_{SUM} from which the loop current is derived. Switch 315 (531) is controlled by a hook switch detector (313/533) which indicates on hook/off-hook status by measuring the metallic loop current, I_L. *Note that there is no distinction in the loop current between Apfel's points "B" and "E".* (Apfel, col. 4, lines 7-39; col. 5, lines 35-50; col. 6, lines 38-49; Figs. 3, 4, 5).

Thus applicant respectfully submits that although Apfel discloses DC feed with hysteresis, Apfel does not teach or disclose *a method of controlling a SLIC DC feed with hysteresis* including a) transitioning DC feed from a first point on a first characteristic curve to a first point on a second characteristic curve, and b) transitioning DC feed from a second point on the second characteristic curve to a second point on the first characteristic curve, *wherein the points are all distinct AND the first point of the first characteristic curve and the second point of the second characteristic curve have distinct loop currents.*

Zhou is cited only for the teaching of the use of registers to define characteristic curves.

Ludeman is cited for the proposition of teaching the use of two switching thresholds Ish- and Ish+ for switching between onhook and offhook. The Examiner has improperly attempted to combine Ludeman with Apfel in this circumstance. Applicant respectfully submits, that Ludeman does not teach or suggest the use of hysteresis. For example, when switching between states there is only one transition point for either characteristic curve. The same path for transitioning between characteristic curves is followed regardless of which characteristic curve is being switched to. For a given characteristic curve, Ludeman's "transition-to" and "transition-from" point is one and the same.

Thus none of the cited references, alone or in combination, teaches or discloses *a method of controlling a SLIC DC feed with hysteresis* including a) transitioning DC feed from a first point on a first characteristic curve to a first point on a second characteristic curve, and b) transitioning DC feed from a second point on the second characteristic curve to a second point on the first characteristic curve, *wherein the points are all distinct AND the first point of the first characteristic curve and the second point of the second characteristic curve have distinct loop currents*

In contrast, claim 1 includes the language:

1. A method of controlling a subscriber loop interface circuit (SLIC) DC feed with hysteresis, comprising:
   a) switching from a normal mode DC feed to a modified mode DC feed when $V_M \leq V_{THRESH1}$, wherein *a DC feed defined by metallic voltage (V_M) and loop current is transitioned from a first point on a first characteristic curve associated with the normal mode to a first point on a second characteristic curve associated with the modified mode;* and
   b) switching from the modified mode to the normal mode when $V_M \geq V_{THRESH2}$, *wherein the DC feed is transitioned from a second point on the second characteristic curve to a second point on the first characteristic curve, wherein the first and second points of each of the first and second characteristic curves are all distinct, wherein the first point of the first characteristic curve and the second point of the second characteristic curve have distinct loop currents.*

(Claim 1, as amended)(*emphasis added*)

Similar arguments can be presented with respect to claim 6 which includes the language:

> 6. A subscriber loop interface circuit apparatus comprising:
>
> control circuitry for controlling a subscriber loop DC feed with hysteresis; and
>
> a plurality of programmable registers storing values defining a first characteristic curve and a second characteristic curve, *wherein the control circuitry switches from a normal mode DC feed following the first characteristic curve to a modified mode DC feed following the second characteristic curve when* $V_M \leq V_{THRESH1}$, wherein V_M is a metallic voltage, *wherein the control circuitry switches from the modified mode to the normal mode when* $V_M \geq V_{THRESH2}$, *wherein* $V_{THRESH1} < V_{THRESH2}$, *wherein the switching from the normal mode and the switching from the modified mode occur at distinct loop currents.*

(Claim 6, as amended)(*emphasis added*)

Likewise, similar arguments may be made with respect to claim 13. The cited references do not teach or suggest switching between modes with hysteresis and at distinct loop currents. In contrast, claim 13 includes the language:

> 13. A method of controlling a DC feed from a subscriber loop interface circuit (SLIC), comprising the steps of:
>
> *switching from a normal mode DC feed following a first characteristic curve to a modified mode DC feed following a second characteristic curve when* $I_L \geq I_{THL}$, *wherein* I_L *is a subscriber loop current; and*
>
> *switching from the modified mode to the normal mode when* $I_L \leq I_{THH}$, *wherein* I_{THH} *and* I_{THL} *are distinct, wherein switching between modes occurs with hysteresis such that for each characteristic curve the switched-to DC feed point is substantially distinct from the switched-from DC feed point on the same characteristic curve.*

(Claim 13, as amended)(*emphasis added*)

Applicant thus submits claims 1, 6, and 13 are not obvious in view of the cited references. Given that claims 2-5 depend from claim 1, claims 7-12 depend from claim 6, and claims 14-16 depend from claim 13, applicant submits claims 2-5, 7-12, and 14-16 are likewise not anticipated by Apfel.

Applicant submits that the 35 U.S.C. § 103 rejections have been overcome.

Conclusion

In view of the amendments and arguments presented above, applicant respectfully submits the applicable rejections and objections have been overcome. Accordingly, claims 1-16 should be found to be in condition for allowance.

If there are any issues that can be resolved by telephone conference, the Examiner is respectfully requested to contact the undersigned at **(512) 858-9910**.

Respectfully submitted,

Date_____*August 21, 2006*_____   _____*William D. Davis*_____

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